

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of claims:

Claims 1-13 (canceled)

Claim 14 (new): A polymer actuator comprising a plurality of gel/electrode complexes arranged in an electrolytic solution, said gel/electrode complex being composed of a polymer gel containing acidic or basic functional groups and electrodes placed in the polymer gel, such that the polymer actuator changes in volume upon application of a voltage across said electrodes.

Claim 15 (new): The polymer actuator as defined in Claim 14, wherein the electrolytic solution changes in pH value in proximity of the gel/electrode complexes upon voltage application across the electrodes, and the gel/electrode complexes change in volume in response to the pH change.

Claim 16 (new): The polymer actuator as defined in Claim 14, further comprising more than one unit of the gel/electrode complex composed of a polymer gel having acidic functional groups and more than one unit of the gel/electrode complex composed of a polymer gel having basic functional groups.

Claim 17 (new): The polymer actuator as defined in Claim 14, wherein the polymer gel constituting the gel/electrode complex contains a polymer having acidic functional groups and basic functional groups.

Claim 18 (new): The polymer actuator as defined in Claim 14, wherein the polymer gel constituting the gel/electrode complex contains a mixture of polymers each having acidic functional groups and basic functional groups.

Claim 19 (new): The polymer actuator as defined in Claim 14, wherein the gel/electrode complexes are arranged parallel to each other.

Claim 20 (new): The polymer actuator as defined in Claim 14, wherein the gel/electrode complexes are arranged in a container which is filled with said electrolytic solution and said container has electrodes projecting from its both ends.

Claim 21 (new): The polymer actuator as defined in Claim 20, wherein the container is flexible so as to follow the volume change of the gel/electrode complex.

Claim 22 (new): The polymer actuator as defined in Claim 14, wherein the polymer gel is a polymeric hydrogel and the electrolytic solution is an electrolytic aqueous solution.

Claim 23 (new): The polymer actuator as defined in Claim 14, wherein the electrode constituting the gel/electrode complex is a coiled metal wire or a metal mesh.

Claim 24 (new): The polymer actuator as defined in Claim 14, wherein the electrode constituting the gel/electrode complex is any one of an electrically conductive granular, and a fibrous substance mixed with or dispersed in the polymer gel.

Claim 25 (new): The polymer actuator as defined in Claim 14, wherein the electrode constituting the gel/electrode complex is composed of a coiled metal wire or a metal mesh and an electrically conductive granular or fibrous substance.

Claim 26 (new): The polymer actuator as defined in Claim 14, wherein the electrode is made of at least one species selected from the group consisting of gold, platinum, palladium, amorphous carbon, and graphite.